

What is claimed is:

1. A method for managing network services between a plurality of networks comprising:
receiving at a Voice Proxy Server (VPS) an Internet Protocol data packet with a
corresponding address from a first network source, wherein the Internet Protocol data
packet comprises a header and a payload and the payload of said Internet Protocol data
packet contains at least a portion of a destination address;
translating the destination address; and
delivering the Internet Protocol data packet to a destination node on a second network
based on said translating.
2. The method of claim 1 wherein the Internet Protocol data packet carries Voice-over-IP
(VoIP) protocol messages.
3. The method of claim 2 wherein the Voice-over-IP (VoIP) protocol is one of Media
Gateway Controller Protocol (MGCP)/Network-based Call signaling (NCS) protocol and
Session Initiation Protocol (SIP).
4. The method of claim 3 wherein the Voice-over-IP (VoIP) protocol is MGCP/NCS.
5. The method of claim 4 wherein the VoIP protocol provides call control.
6. The method of claim 1 wherein the first network is a public network and the second
network is a private network, said private network comprising a plurality of local nodes.
7. The method of claim 1 wherein the first network is a private network comprising a
plurality of local nodes and the second network is a public network.
8. The method of claim 1 wherein said translating comprises:

receiving a first endpoint identifying parameter corresponding to a private network node;
checking a mapping table for the first endpoint identifying parameter;
allocating a logical line number to create a VPS endpoint identifying parameter based on said checking, wherein the VPS endpoint identifying parameter comprises the logical line number and VPS IP address;
saving a mapping of the first endpoint identifying parameter and the VPS endpoint identifying parameter in the mapping table; and
replacing the first endpoint identifying parameter with the VPS endpoint identifying parameter.

9. The method of claim 8 wherein said translating further comprises:

receiving a first parameter corresponding to a Call Agent of a public network;
saving the first parameter;
replacing the first parameter with a second parameter, the second parameter corresponding to the VPS.

10. The method of claim 1 wherein said translating comprises:

receiving a first endpoint identifying parameter from a private network node, wherein the first endpoint identifying parameter represents a group of endpoints;
querying the number of endpoints associated with the private network node;
receiving a list of endpoint identifying parameters associated with the private network node;
checking a mapping table for each of the endpoint identifying parameters associated with the private network node;
obtaining a corresponding VPS endpoint identifying parameter for each of the endpoint identifying parameters associated with the private network node; and
replacing each of the endpoint identifying parameters associated with the private network node with corresponding VPS endpoint identifying parameter, each of the VPS endpoint identifying parameters comprising a logical line number and VPS IP address.

11 The method of claim 1 wherein said translating comprises:

receiving a first endpoint identifying parameter corresponding to a private network node;

checking a mapping table for the first endpoint identifying parameter; and

sending a NACK response based on said checking.

12. The method of claim 1 wherein said translating comprises:

receiving a first endpoint identifying parameter from a public network, wherein the first endpoint identifying parameter comprises a VPS endpoint;

checking a mapping table for the first endpoint identifying parameter;

obtaining an identifier for a destination node in a private network from the mapping table, the identifier corresponding to the first endpoint identifying parameter; and

replacing the first endpoint identifying parameter with a second endpoint identifying parameter, wherein the second endpoint identifying parameter identifies the destination node in the private network.

13. The method of claim 12 wherein said translating further comprises:

receiving a first parameter corresponding to a Call Agent of the public network;

saving the first parameter; and

replacing the first parameter with a second parameter, the second parameter corresponding to the VPS.

14. The method of claim 12 further comprising:

receiving a Transaction Identifier from a private network node;

retrieving a corresponding endpoint from the mapping table based on the Transaction Identifier;

receiving a parameter comprising a receiving address of the private network node, said receiving address of the private network node comprising a private IP address and port number;

assigning a port number to create a public receiving address, said public receiving address comprising the VPS IP address and the assigned port number;

mapping a connection between the receiving address of the private node and the public receiving address; and
saving mapping information, said mapping information comprising the connection between the private receiving address and the public receiving address.

15. The method of claim 14 further comprising modifying the mapping information.

16. The method of claim 1 wherein said translating comprises:

receiving a first endpoint identifying parameter from a public network, wherein the first endpoint identifying parameter comprises a wild card representing one of a plurality of endpoints;

checking a mapping table for the first endpoint identifying parameter;

obtaining an endpoint from the plurality of endpoints associated with the first endpoint identifying parameter in the mapping table; and

replacing the first endpoint identifying parameter with a second endpoint identifying parameter, wherein the second endpoint identifying parameter identifies the obtained endpoint.

17. The method of claim 16 wherein said translating further comprises:

receiving a first parameter from a private network node, the first parameter indicating a notified entity corresponding to the VPS; and

replacing the first parameter with a second parameter, wherein the second parameter corresponds to an address of a Call Agent in a public network.

18. The method of claim 16 further comprising:

receiving a Transaction Identifier from a private network node;

retrieving a corresponding endpoint from the mapping table based on the Transaction Identifier;

receiving a parameter from a private network node, said parameter comprising a receiving address of the private network node, said receiving address of the private network node comprising a private IP address and port number; and

modifying previously stored mapping information, wherein the mapping information comprises the connection between the private receiving address and the public receiving address.

19. The method of claim 1 wherein said translating comprises:

receiving a first endpoint identifying parameter, wherein the first endpoint identifying parameter comprises a wild card representing multiple endpoints;

checking a mapping table for the first endpoint identifying parameter;

obtaining a plurality of endpoints associated with the first endpoint identifying parameter in the mapping table; and

replacing the first endpoint identifying parameter with a plurality of second endpoint identifying parameters, wherein each second endpoint identifying parameter identifies a corresponding endpoint.

20. The method of claim 19 further comprising:

receiving a Transaction Identifier from a private network node;

retrieving corresponding endpoints from the mapping table based on the Transaction Identifier; and

deleting mapping information for the retrieved endpoints.

21. The method of claim 1 wherein said translating comprises:

receiving a first endpoint identifying parameter from a public network, wherein the first endpoint identifying parameter comprises a wild card representing all of the endpoints;

checking a mapping table for the first endpoint identifying parameter;

obtaining a plurality of endpoints corresponding to the first endpoint identifying parameter in the mapping table; and

replacing the first endpoint identifying parameter with a plurality of second endpoint identifying parameters, wherein each second endpoint identifying parameter identifies an obtained endpoint.

22. The method of claim 21 further comprising:

receiving a list of endpoint identifying parameters from each node in a private network;

checking a mapping table for each of the endpoint identifying parameters received from each node in the private network;

retrieving VPS endpoint identifying parameters corresponding to each of the endpoint identifying parameters received from each node in the private network from the mapping table; and

replacing each of the endpoint identifying parameters received from each node in the private network with a corresponding VPS endpoint identifying parameter.

23. The method of claim 1 wherein said translating comprises:

receiving a first endpoint identifying parameter from a public network, wherein the first endpoint identifying parameter comprises a wild card representing all endpoints;

receiving a value indicating a maximum number of endpoints to return;

checking a mapping table for the first endpoint identifying parameter;

obtaining a plurality of endpoints corresponding to the first endpoint identifying parameter in the mapping table; and

replacing the first endpoint identifying parameter with a plurality of second endpoint identifying parameters, wherein each second endpoint identifying parameter comprises an identifier for an obtained endpoint.

24. The method of claim 23 further comprising:

receiving a list of endpoint identifying parameters from each node in a private network.

checking the mapping table for each of the endpoint identifying parameters received from each node in the private network;

retrieving VPS endpoint identifying parameters corresponding to the endpoint identifying parameters received from each node in the private network from the mapping table;

calculating the total number of retrieved VPS endpoint identifying parameters; and

preparing a list of VPS endpoint identifying parameters comprising less than or equal to the maximum number of endpoint identifying parameters allowed to be returned.

25. The method of claim 24 wherein said translating comprises:

receiving a first endpoint identifying parameter from a public network, wherein the first endpoint identifying parameter comprises a wild card representing all endpoints;
receiving a parameter corresponding to a specific endpoint identifying parameter;
and
preparing a list of VPS endpoint identifying parameters, wherein the first endpoint identifying parameter on the list of VPS endpoint identifying parameters is the endpoint identifying parameter immediately following the specific endpoint identifying parameter.

26. The method of claim 24 wherein said translating comprises:

receiving a first endpoint identifying parameter from a public network, wherein the first endpoint identifying parameter comprises a wild card representing all endpoints;
receiving a parameter corresponding to a specific endpoint identifying parameter;
receiving a parameter indicating the maximum number of endpoint identifying parameters to return; and
preparing a list of VPS endpoint identifying parameters, wherein the first endpoint identifying parameter on the list of VPS endpoint identifying parameters is the endpoint identifying parameter immediately following the specific endpoint identifying parameter and wherein the number of VPS endpoint identifying parameters on the list of VPS endpoint identifying parameters is less than or equal to the maximum number of endpoint identifying parameters allowed to be returned.

27. The method of claim 1 wherein said delivering comprises sending modified signaling messages from private network nodes to a Call Agent in a public network.

28. The method of claim 1 wherein said delivering comprises sending modified signaling messages from a Call Agent in a public network to a desired private network node wherein the IP address of the private network node is retrieved from a mapping table.

29. A method for managing network services between a plurality of networks comprising:

- receiving at a Voice Proxy Server (VPS) an Internet Protocol data packet with a corresponding address from a first network source, wherein the Internet Protocol data packet comprises a header and a payload and the payload of said Internet Protocol data packet contains an RTP data packet;

- checking a mapping table to retrieve a private IP address of a desired destination in a private network;

- replacing the destination address in the IP header with the private IP address; and
- sending RTP packets to proper private nodes.

30. A method for managing network services between a plurality of networks comprising:

- receiving at a Voice Proxy Server (VPS) a Voice-over-Internet Protocol (VoIP) data packet with a corresponding address from a first network source, wherein the Internet Protocol data packet comprises a header and a payload and the payload of said Internet Protocol data packet contains at least a portion of a destination address and wherein the VoIP protocol is Media Gateway Controller Protocol (MGCP)/Network-based Call signaling (NCS) protocol;

- receiving a first endpoint identifying parameter corresponding to a private network node;

- checking a mapping table for the first endpoint identifying parameter;

- allocating a logical line number to create a VPS endpoint identifying parameter based on said checking, wherein the VPS endpoint identifying parameter comprises the logical line number and VPS IP address;

- saving a mapping of the first endpoint identifying parameter and the VPS endpoint identifying parameter in the mapping table;

- replacing the first endpoint identifying parameter with the VPS endpoint identifying parameter; and

delivering the VoIP data packet to a destination node on a second network based on said translating.

31. A method for managing network services between a plurality of networks comprising:

receiving at a Voice Proxy Server (VPS) a Voice-over-Internet Protocol (VoIP) data packet with a corresponding address from a first network source, wherein the Internet Protocol data packet comprises a header and a payload and the payload of said Internet Protocol data packet contains at least a portion of a destination address and wherein the VoIP protocol is Media Gateway Controller Protocol (MGCP)/Network-based Call signaling (NCS) protocol;

receiving a first endpoint identifying parameter from a private network node, wherein the first endpoint identifying parameter represents a group of endpoints;

querying the number of endpoints associated with the private network node;

receiving a list of endpoint identifying parameters associated with the private network node;

checking a mapping table for each of the endpoint identifying parameters associated with the private network node;

obtaining a corresponding VPS endpoint identifying parameter for each of the endpoint identifying parameters associated with the private network node; and

replacing each of the endpoint identifying parameters associated with the private network node with corresponding VPS endpoint identifying parameter, each of the VPS endpoint identifying parameters comprising a logical line number and VPS IP address; and

delivering the VoIP data packet to a destination node on a second network based on said translating.

32. A method for managing network services between a plurality of networks comprising:

receiving at a Voice Proxy Server (VPS) a Voice-over-Internet Protocol (VoIP) data packet with a corresponding address from a first network source, wherein the Internet

Protocol data packet comprises a header and a payload and the payload of said Internet Protocol data packet contains at least a portion of a destination address and wherein the VoIP protocol is Media Gateway Controller Protocol (MGCP)/Network-based Call signaling (NCS) protocol;

receiving a first endpoint identifying parameter from a public network, wherein the first endpoint identifying parameter comprises a VPS endpoint;

checking a mapping table for the first endpoint identifying parameter;

obtaining an identifier for a destination node in a private network from the mapping table, the identifier corresponding to the first endpoint identifying parameter; and

replacing the first endpoint identifying parameter with a second endpoint identifying parameter, wherein the second endpoint identifying parameter identifies the destination node in the private network; and

delivering the VoIP data packet to a destination node on a second network based on said translating.

33. A method for managing network services between a plurality of networks comprising:

receiving at a Voice Proxy Server (VPS) a Voice-over-Internet Protocol (VoIP) data packet with a corresponding address from a first network source, wherein the Internet Protocol data packet comprises a header and a payload and the payload of said Internet Protocol data packet contains at least a portion of a destination address and wherein the VoIP protocol is Media Gateway Controller Protocol (MGCP)/Network-based Call signaling (NCS) protocol;

receiving a first endpoint identifying parameter from a public network, wherein the first endpoint identifying parameter comprises a wild card representing one of a plurality of endpoints;

checking a mapping table for the first endpoint identifying parameter;

obtaining an endpoint from the plurality of endpoints associated with the first endpoint identifying parameter in the mapping table; and

replacing the first endpoint identifying parameter with a second endpoint identifying parameter, wherein the second endpoint identifying parameter identifies the obtained endpoint; and

delivering the VoIP data packet to a destination node on a second network based on said translating.

34. A method for managing network services between a plurality of networks comprising:

receiving at a Voice Proxy Server (VPS) a Voice-over-Internet Protocol (VoIP) data packet with a corresponding address from a first network source, wherein the Internet Protocol data packet comprises a header and a payload and the payload of said Internet Protocol data packet contains at least a portion of a destination address and wherein the VoIP protocol is Media Gateway Controller Protocol (MGCP)/Network-based Call signaling (NCS) protocol;

receiving a first endpoint identifying parameter, wherein the first endpoint identifying parameter comprises a wild card representing multiple endpoints;

checking a mapping table for the first endpoint identifying parameter;

obtaining a plurality of endpoints associated with the first endpoint identifying parameter in the mapping table; and

replacing the first endpoint identifying parameter with a plurality of second endpoint identifying parameters, wherein each second endpoint identifying parameter identifies a corresponding endpoint; and

delivering the VoIP data packet to a destination node on a second network based on said translating.

35. A method for managing network services between a plurality of networks comprising:

receiving at a Voice Proxy Server (VPS) a Voice-over-Internet Protocol (VoIP) data packet with a corresponding address from a first network source, wherein the Internet Protocol data packet comprises a header and a payload and the payload of said Internet Protocol data packet contains at least a portion of a destination address and wherein the

VoIP protocol is Media Gateway Controller Protocol (MGCP)/Network-based Call signaling (NCS) protocol;

- receiving a first endpoint identifying parameter from a public network, wherein the first endpoint identifying parameter comprises a wild card representing all of the endpoints;

- checking a mapping table for the first endpoint identifying parameter;

- obtaining a plurality of endpoints corresponding to the first endpoint identifying parameter in the mapping table; and

- replacing the first endpoint identifying parameter with a plurality of second endpoint identifying parameters, wherein each second endpoint identifying parameter identifies an obtained endpoint; and

- delivering the VoIP data packet to a destination node on a second network based on said translating.

36. A method for managing network services between a plurality of networks comprising:

- receiving at a Voice Proxy Server (VPS) a Voice-over-Internet Protocol (VoIP) data packet with a corresponding address from a first network source, wherein the Internet Protocol data packet comprises a header and a payload and the payload of said Internet Protocol data packet contains at least a portion of a destination address and wherein the VoIP protocol is Media Gateway Controller Protocol (MGCP)/Network-based Call signaling (NCS) protocol;

- receiving a first endpoint identifying parameter from a public network, wherein the first endpoint identifying parameter comprises a wild card representing all endpoints;

- receiving a value indicating a maximum number of endpoints to return;

- checking a mapping table for the first endpoint identifying parameter;

- obtaining a plurality of endpoints corresponding to the first endpoint identifying parameter in the mapping table; and

- replacing the first endpoint identifying parameter with a plurality of second endpoint identifying parameters, wherein each second endpoint identifying parameter comprises an identifier for an obtained endpoint; and

delivering the VoIP data packet to a destination node on a second network based on said translating.

37. A method for managing network services between a plurality of networks comprising:

receiving at a Voice Proxy Server (VPS) a Voice-over-Internet Protocol (VoIP) data packet with a corresponding address from a first network source, wherein the Internet Protocol data packet comprises a header and a payload and the payload of said Internet Protocol data packet contains at least a portion of a destination address and wherein the VoIP protocol is Media Gateway Controller Protocol (MGCP)/Network-based Call signaling (NCS) protocol;

translating the destination address; and

sending modified signaling messages from private network nodes to a Call Agent in a public network.

38. A method for managing network services between a plurality of networks comprising:

receiving at a Voice Proxy Server (VPS) a Voice-over-Internet Protocol (VoIP) data packet with a corresponding address from a first network source, wherein the Internet Protocol data packet comprises a header and a payload and the payload of said Internet Protocol data packet contains at least a portion of a destination address and wherein the VoIP protocol is Media Gateway Controller Protocol (MGCP)/Network-based Call signaling (NCS) protocol;

translating the destination address; and

sending modified signaling messages from a Call Agent in a public network to a desired private network node wherein the IP address of the private network node is retrieved from a mapping table.